WORKING DRAFT

Joint Total Asset Visibility Operational Architecture

for Mobilization – Deployment – Employment – Sustainment – Redeployment

VOLUME 1

Joint Total Asset Visibility Office

Joint Total Asset Visibility Architectures

Executive Summary

Joint Total Asset Visibility (JTAV) is reliable access to timely and accurate information on the location, movement, status, and identity of units, personnel, equipment and supplies across components. It also includes the capability to act upon that information to improve the overall performance of Department of Defense (DOD) logistics. JTAV is not merely an automated information system; it is a capability that a collection of systems can provide. This capability provides CINCs, Services, and DOD Components access to automated information systems with the goal of total asset visibility for any user on any box or work station.

Achieving JTAV is an enormous undertaking, one that involves all logistics disciplines and DOD Components. An initial JTAV capability has been fielded to EUCOM, CENTCOM and ACOM. However, the system providing this initial capability was fielded prior to the implementing strategy embodied in the Global Combat Support System (GCSS) and before the Defense Information Infrastructure (DII)/ Common Operating Environment (COE) attained sufficient maturity. Further, the functionally oriented architectural basis for this initial implementation has been superseded by the operationally or process oriented architectural framework issued as the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Integrated Support Activity's recently published C4ISR Architectural Framework -- Version 1.0 in June, 1996.

In early 1997, the JTAV Office initiated the development of the JTAV operational and system architecture to support the joint warfighting process in accordance with the C4ISR Framework. This document is the product of that development effort. The architectures are documented in detail in Volume I, JTAV Operational Architecture and Volume II, JTAV System Architecture. Both volumes are considered living documents and can be modified to incorporate additional core processes and emerging technologies.

The JTAV Operational Architecture provides common terms of reference, establishes common definitions and documents asset visibility information requirements to support joint warfighting. This document, includes process maps or activity models of mobilization, deployment, sustainment, redeployment and employment. It also includes, an Information Exchange Requirements Matrix (IERM), and Source Node and Receiver Node Reference Lists. The process maps, while not activity models precisely as defined by the C4ISR, serve the purpose of documenting and decomposing tasks to identify asset visibility requirements to support joint warfighting. The IERM comprise the information exchange requirements and express the relationship of tasks, operational elements and information flow.

The JTAV System Architecture identifies and describes the infrastructure capabilities and components that are necessary in order to effectively support the process and information exchange requirements documented in the JTAV Operational Architecture. The engineering drivers in the development of the JTAV Systems Architecture were:

1. The JTAV Operational Architecture, notably the activity diagrams or process flows and information exchange requirements
2. DOD Management Direction
3. GCSS Design Principles and
4. The System and Technology Architecture Supporting Current TAV Capabilities

The JTAV Operational Architecture and the JTAV System Architecture, as documented here represent the blueprints for the implementation of Joint Total Asset Visibility over time.

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1.0 Introduction.

The JTAV Operational Architecture provides common terms of reference, establishes common definitions and documents asset visibility information requirements to support joint warfighting. This document, including the Process Maps at Appendix B, the Information Exchange Requirements Matrix (IERM) at Appendix C, Source Node Reference List at Appendix D and Receiver Node Reference List at Appendix E comprise the JTAV Operational Architecture developed by the Joint Integrated Process Team (JIPT).

The JIPT produced both the JTAV operational architecture as well as the "to be" system architecture. The "to be" system architecture is depicted in **Figure 8, JTAV "To Be" System Architecture.** A description of the system architecture is in Volume II, JTAV System Architecture.

There are four major sections to this document. Section 1.0 is discussion of the evolution of JTAV and is intended to provide the reader a common understanding of JTAV to date and define the environment in which JTAV must operate. Section 2.0 is a summary of the JTAV operational architecture and defines the inputs provided to develop the JTAV system architecture. Section 3.0 is a high level summary of joint warfighting, the operational process which this architecture is being developed to support. Although joint doctrine was used extensively in its development, it is not intended to be a duplication or definition of joint doctrine. Section 4.0 is a summary.

1.1 Background. Joint Total Asset Visibility (JTAV) is reliable access to timely and accurate information on the location, movement, status, and identity of units, personnel, equipment and supplies across components. It also includes the capability to act upon that information to improve the overall performance of Department of Defense (DoD) logistics.

JTAV is not merely an automated information system; it is a capability that a collection of systems can provide. JTAV does not produce data; it produces information by providing access to data in existing systems and presenting- it to staff officers and decision makers. JTAV does not verify or validate business practices but does provide the information necessary to reengineer business processes,

The JTAV goal is streamlined, flexible and responsive access to asset visibility information for all customers, from Unified Commanders to unit logistics officers and operators.

Significant progress has been made to achieve this goal.

Figure 1, Two Views of the World, depicts the two general customer perspectives, or views of the world operating within the JTAV context, as well as a timeline of JTAV achievements for both DOD Corporate Managers and Operators and CINC/ JTF Commanders. These two views of the world generate widely different JTAV requirements. For example, DOD Corporate Managers focus on efficient management of

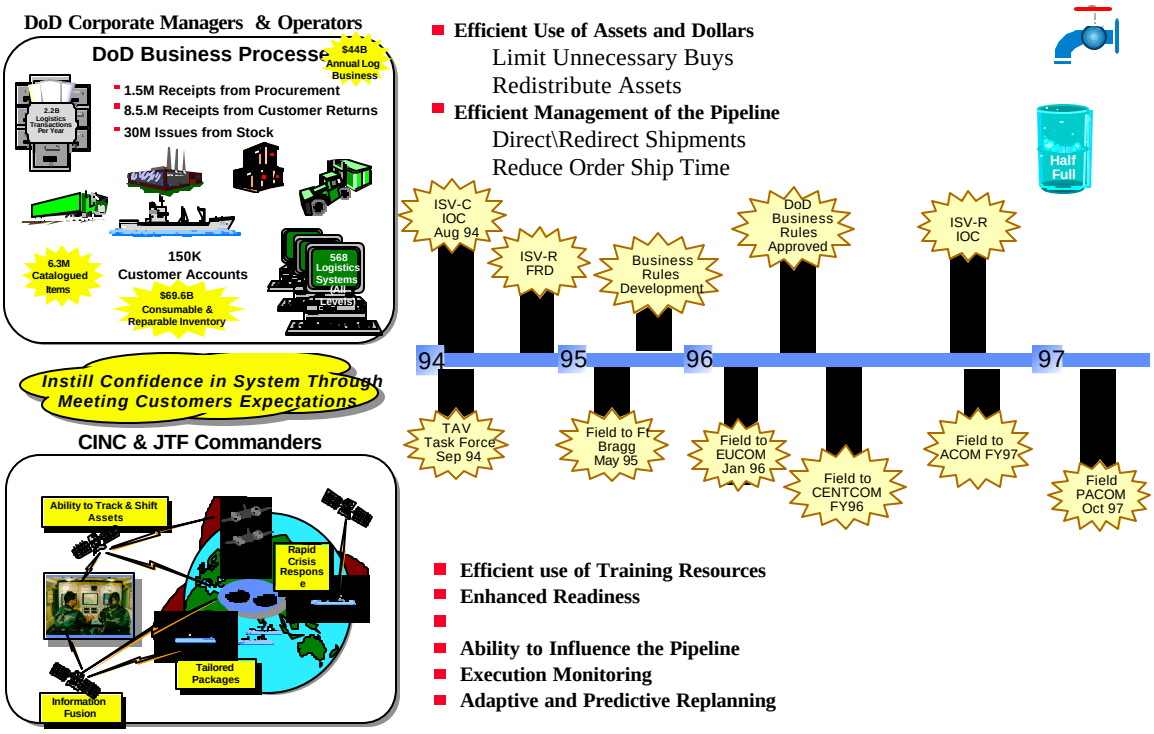


Figure 1. Two Views of the World

assets and dollars, whereas CINC and JTF Commanders focus on enhanced readiness and warfighting capability.

Past efforts to satisfy both views of the world did not have benefit of the integration/interoperability provided by the Global Combat Support System (GCSS) and Defense Information Infrastructure (DII)/ Common Operating Environment (COE). Also, previous architectural efforts were completed before the publication of Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Integrated Support Activity's recently published C4ISR Architectural Framework -- Version 1.0

Accordingly, the JTAV Office developed the JTAV operational and system architectures, focusing on high-level views of the mobilization, deployment, employment, sustainment, and redeployment phases of the warfighting process.

In keeping with the C4ISR Architectural Framework, only a subset of standard architecture products, the activity model and information exchange requirements, were produced by the JIPT operational sub-group. The process maps at Appendix B, while not activity models precisely as defined by the C4ISR, serve the purpose of documenting and decomposing tasks to identify asset visibility requirements to support joint warfighting. Also, Appendices C, D and E comprise the information exchange requirements and express the relationship of tasks, operational elements and information flow as defined in the C4ISR.

1.2 Common Summary Information. Documentation of architectures in the context of C4ISR requires common summary of information to facilitate understanding and provide

opportunities for comparing and integrating architectures. The JTAV common summary of information in the context of the C4ISR format is as follows:

Scope. Joint Total Asset Visibility of the location, movement, status, and identity of units, personnel, equipment and supplies to support Joint Warfighting. This architecture is applicable to the current and "To Be" JTAV System.

Type of Architecture. **Figure 2** is an architecture overview from the C4ISR. This narrative describes the JTAV Operational Architecture developed from detailed analysis of Joint Warfighting.

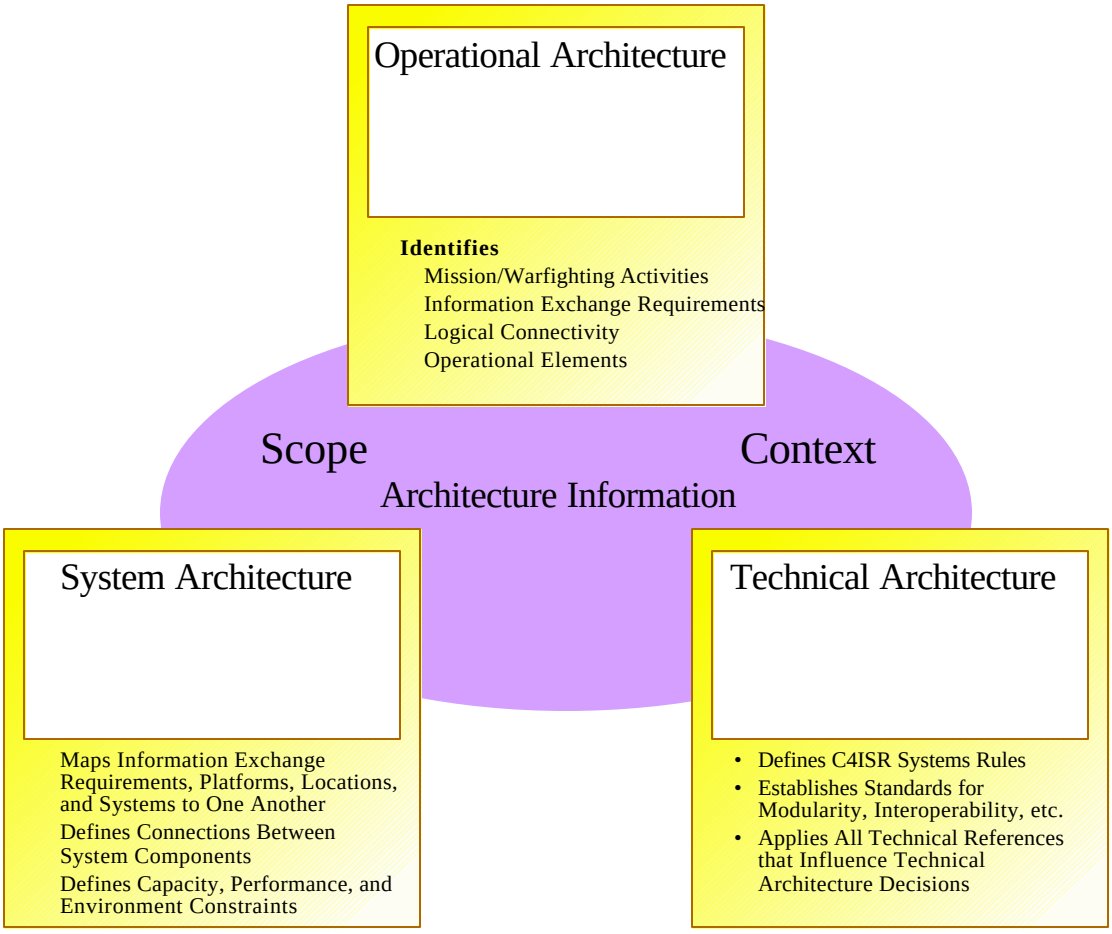


Figure 2. Architecture Overview

Purpose. This architecture was developed to identify asset visibility information requirements to support joint warfighting, provide a basis for understanding the process of joint warfighting to the system team, recommend an objective solution to the JTAV and GTN data interface and verify functional user requirements documented in the July 1997, Functional Requirements Document for JTAV.

Intended Users. This architecture is intended to serve the JTAV Program Office, System Architect Team, System Developer, and all Asset Visibility Cluster users who require access to JTAV to support Joint Warfighting.

Context. In addition to the context discussed in para 1.1 background, this architecture links to the GCSS Operational Architecture , see para 2.2 and builds on the UJTL to identify operational tasks. It does not include the core processes of life cycle management and force preparedness.

1.3 Purpose. This architecture identifies existing and required asset visibility capabilities to support the five phases, operational elements or participants in the warfighting function , including supporting and supported Commanders-in-Chief (CINCs), Major Commands, and Service/Agency Headquarters and provides the basis for identifying automated systems that provide asset visibility to support the TAV requirements of the five phases.

1.4 Scope. Figure 3, GCSS Operational Architecture, depicts the three core processes requiring operational architectures.

Figure 3. GCSS Operational Architecture

Figure 4, Our Focus, while depicting the same core processes, points out that development of this JTAV operational architecture is based only on detailed analysis of the five phases of the joint warfighitng process, which is doctrine based. It also points out that JTAV already has an existing capability that has been deployed and that this capability is mostly oriented towards the CINC and JTF Commanders.

Again, only joint warfighting is covered in detail in this narrative. The two additional processes in figure 4, force preparedness and life cycle management, may require additional JTAV architectures.

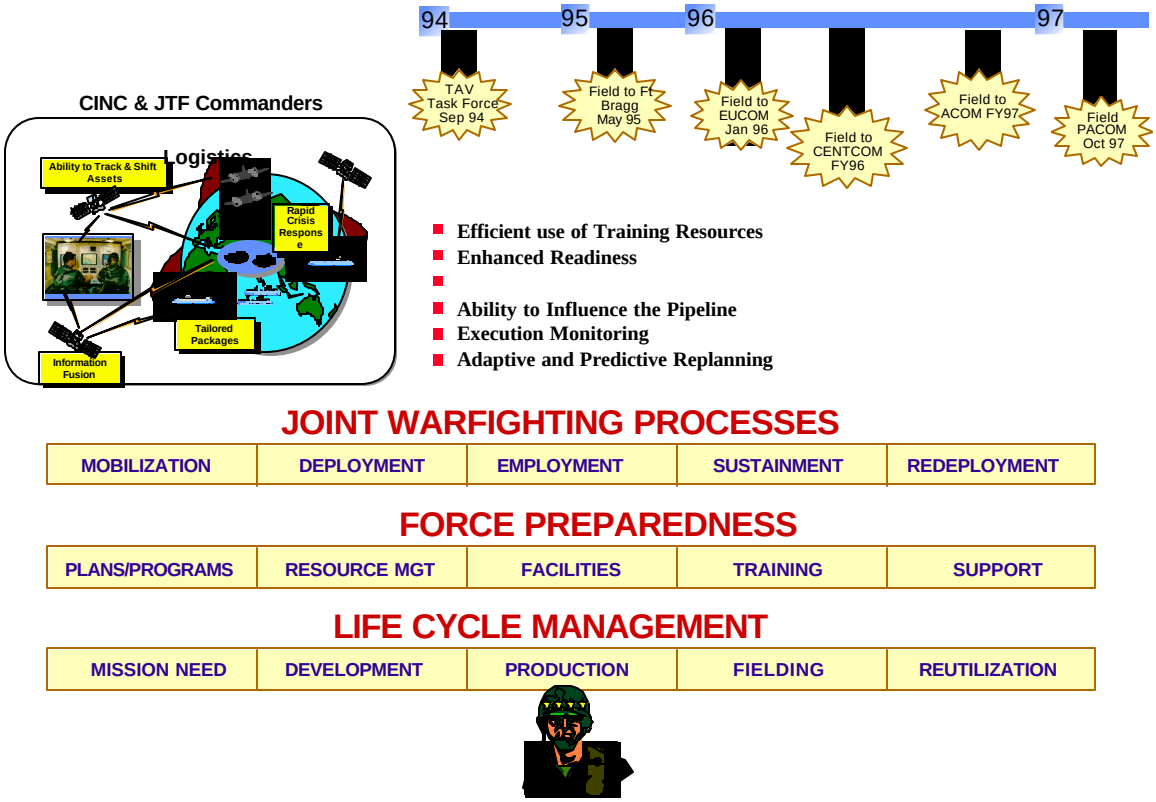


Figure 4. Our Focus

2.0 Operational Architecture Summary. This section describes the JTAV operational architecture for joint warfighting. Our approach and linkage to GCSS is discussed first, followed by a description of the operational process supported by this architecture, the warfighting phases. It also includes a description of the operational architecture inputs to the system architecture, the process flow maps, IERM and receiver and source reference list.

2.1 Operational Architecture Developmental Approach Figure 5, JIPT Approach, emphasizes the role of the C4ISR and identifies JIPT guiding principles. Past work and joint doctrine provided the base line to develop the operational architecture tasks, decompose the tasks into activities and define the operational elements.

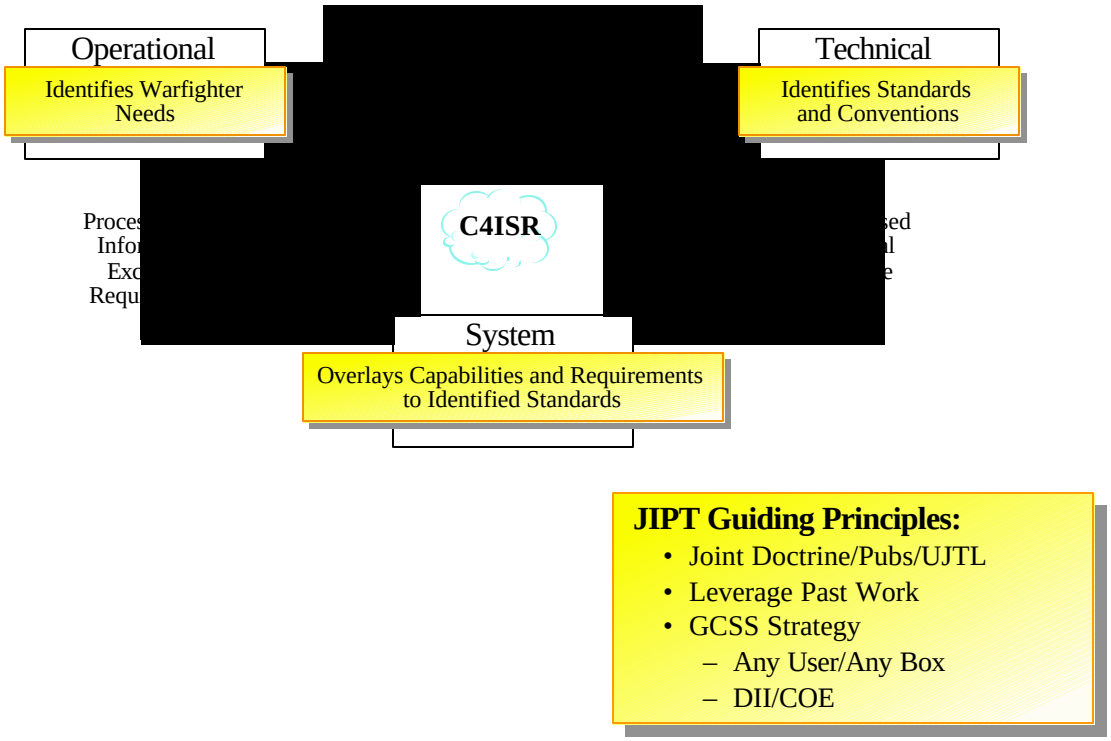


Figure 5. JIPT Approach

Figure 6, JTAV JIPT, depicts the mission and scope of the architectural effort. The operational architecture sub-group produced this high level narrative, process flow maps and information exchange requirements matrix.

Mission:

The JIPT, Under the Leadership of the Director, JTAV Office, will

30 June 1997.

Scope:

In-Process, In-Storage, and In-Transit

Deployment, Sustainment, and Redeployment

1997 - 2000 Time frame

In-Theater Focus

One Architecture Supporting Both Views of the World

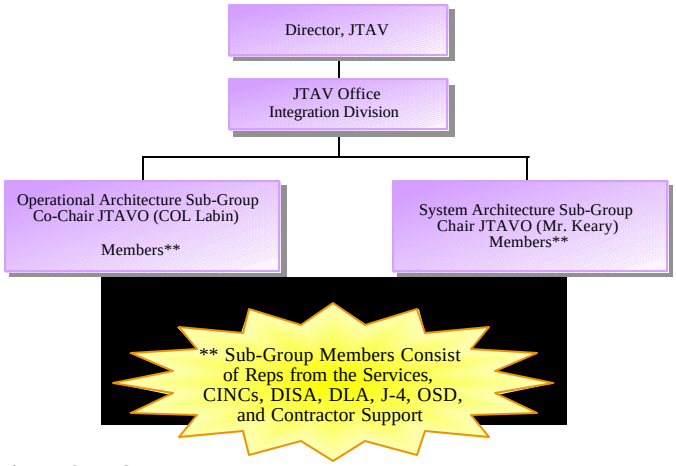


Figure 6. JTAV JIPT

Figure 7, Operational Architecture Process, depicts the framework used by the sub-group. For example, in deployment we identified the core tasks , decomposed them into activities, then drilled down to sub-activities to determine the TAV information requirements to accomplish that sub-activity. These TAV information requirements were listed in an information exchange matrix that determined information flow to include sources and receivers or users. The combination of the TAV requirements with the associated information is the IERM listed at Appendix C.

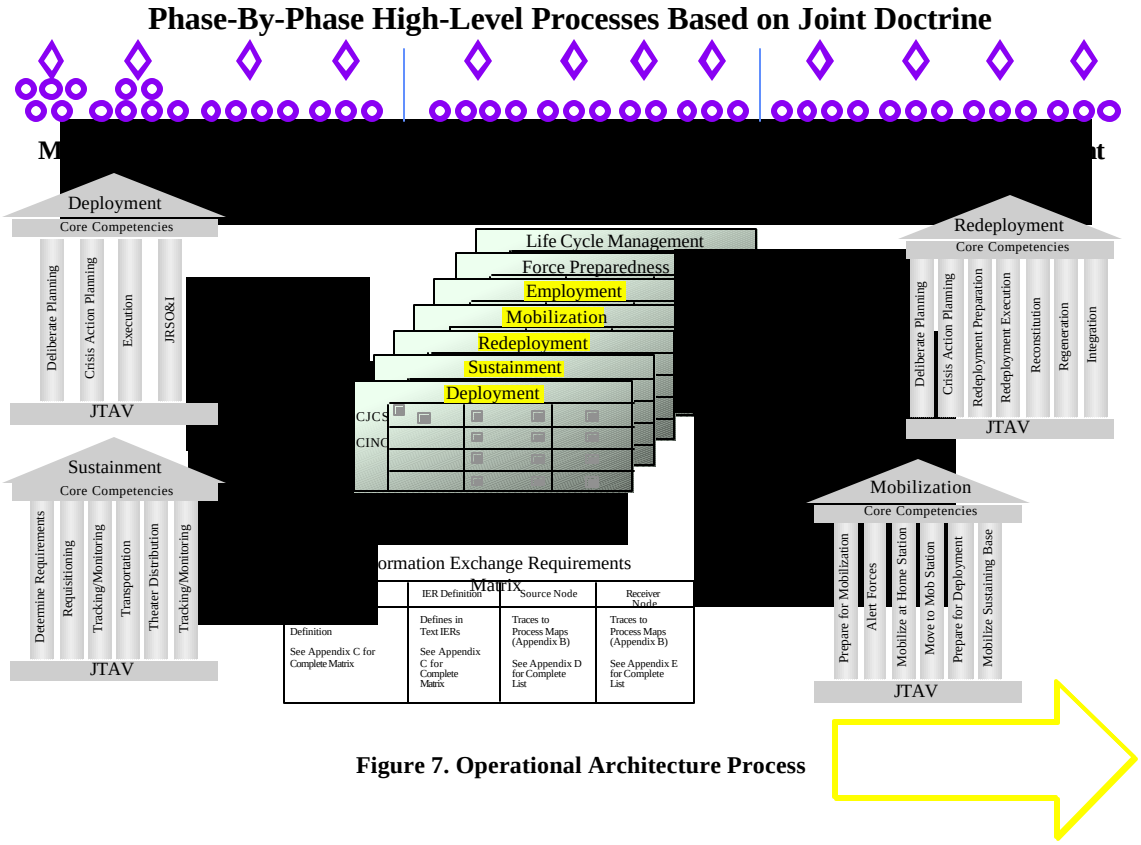
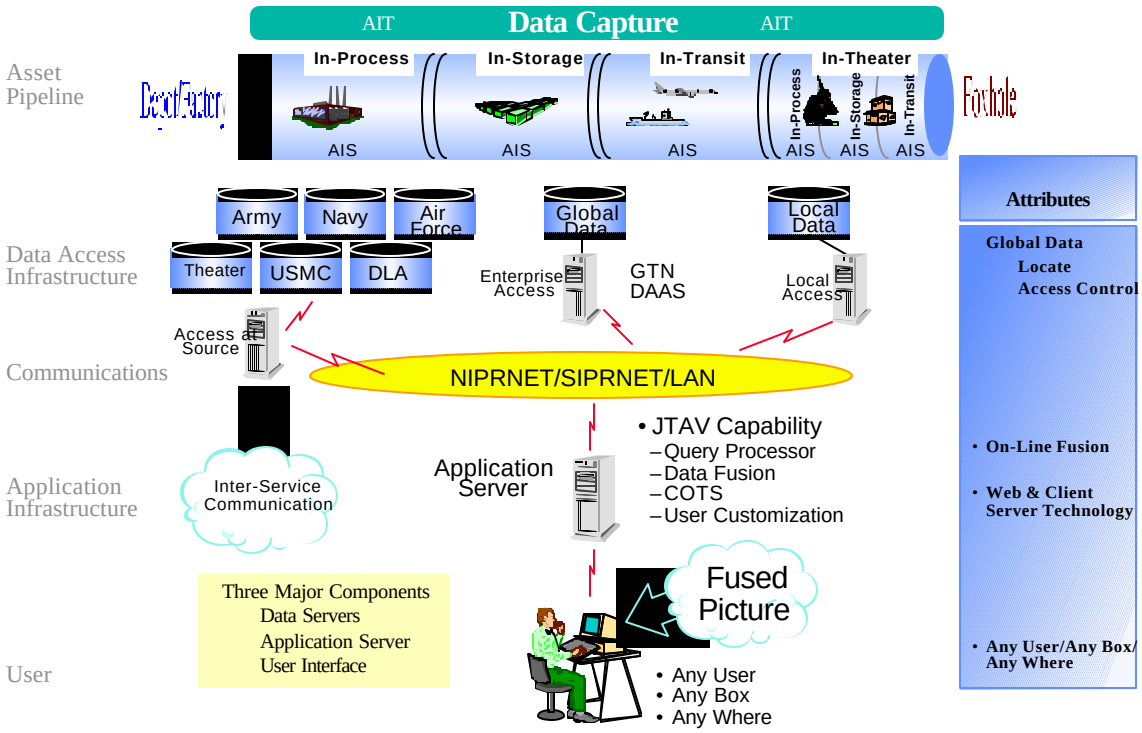


Figure 7. Operational Architecture Process

The JIPT produced both the JTAV operational architecture as well as the "to be" system architecture. The "to be" system architecture is depicted in **Figure 8, JTAV "To Be" System Architecture.** See Volume II, JTAV System Architecture, for more information on the system architecture.



2.2 GCSS/JTAV Relationship. **Figure 9, GCSS-JTAV Relationship,** depicts the GCSS concept of incorporating personnel, logistics, finance, acquisition, medical and other support in a cross-functional environment leading to a future capability consistent with the "any box, any user, one net, and one picture." JTAV directly supports GCSS in three ways. First, it will provide the GCSS required capability to see assets across the functional areas of personnel, units and materiel (to include medical). Second, it increases access to information for both the warfighter and DOD corporate management. Finally, the JTAV Operational Architecture sub-group used the same architectural framework as GCSS to verify functional requirements and identify information requirements.

JTAV is directly linked to GCSS by providing the capability to "see the data" in terms of identity, status, location and movement for units, personnel and materiel. Additionally, the Automatic Identification Technology (AIT) associated with JTAV will provide the automated means to "capture the data" within the GCSS context.

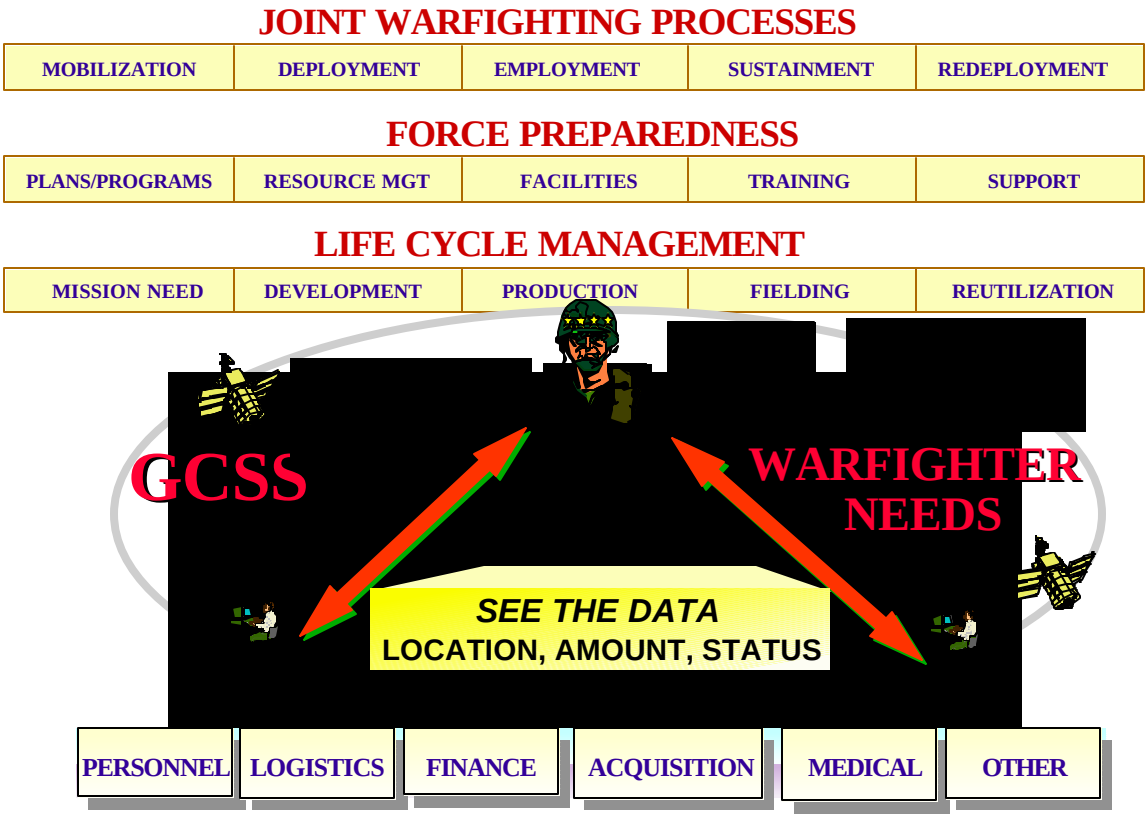


Figure 9. GCSS JTAV Relationship

2.3 Context. **Figure 10, Two Views of the World**, depicts the context within which JTAV provides asset visibility. It not only consists of the two views of the world (or "customer perspective"), it includes past achievements that shape or modify customer expectations and evolving concepts such as Global Combat Support System (GCSS) and Joint Vision 2010.

Customer expectations are shaped and modified by past JTAV achievements. For example, within the last three years JTAV has published an initial baseline of TAV functional requirements, successfully facilitated redistribution of consumable assets between Service retail activities, and provided in-theater asset visibility to Europe in support of Operation Joint Endeavor. These achievements are valuable in both defining and expanding JTAV capabilities.

This operational architecture was developed in concert with both Joint Vision 2010, prepared by the Chairman, Joint Chiefs of Staff, and the DoD Strategic Logistics Plan prepared by the Deputy Under Secretary of Defense (Logistics).

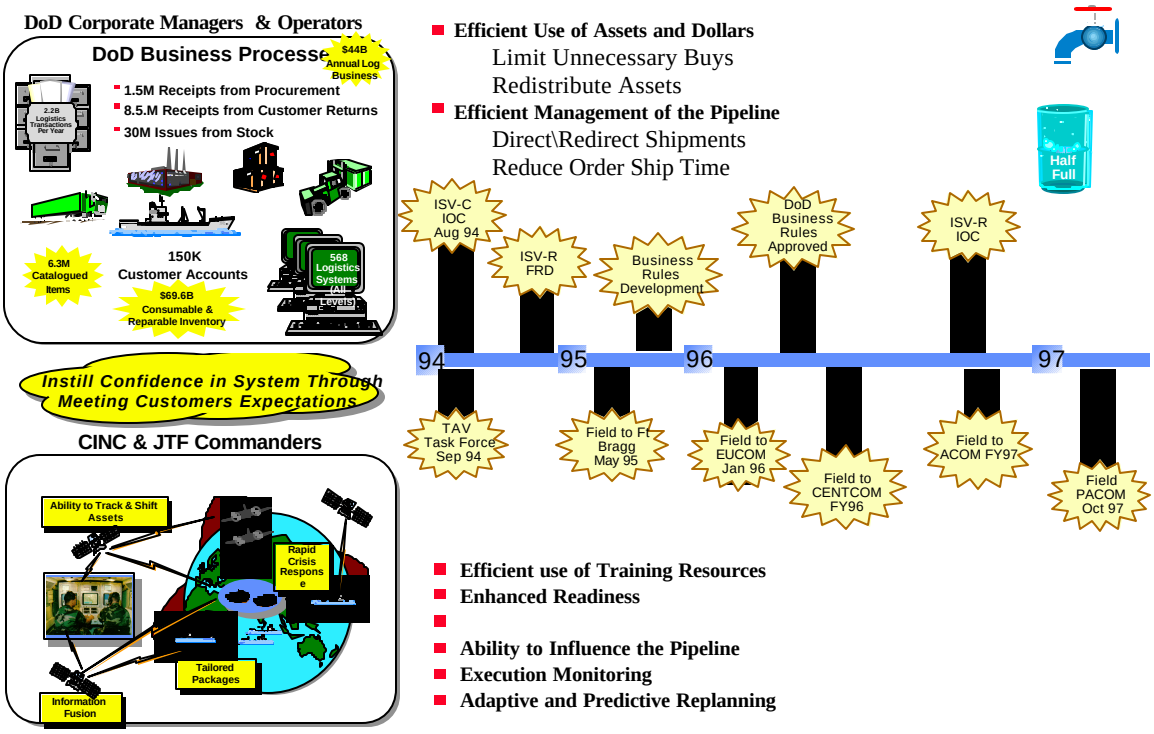


Figure 10. Two Views of the World

2.4 Operational Architecture Inputs to System Architecture. The operational architecture sub-group produced this narrative, the process flow maps and receiver and user node reference list. The IERM was produced jointly by both sub-groups. These documents were used by the system sub-group to develop the system architecture.

2.4.1 Process Flow Maps. The process maps at Appendix B, while not activity models precisely as defined by the C4ISR, serve the purpose of documenting and decomposing tasks to identify asset visibility requirements to support joint warfighting.

The process flow maps at Appendix B identify the organizations (at a very high level) involved in the joint warfighting process and help to describe the relationships among and between those organizations and activities, as well as, a general information flow.

The purple boxes at the top are high level joint warfighting tasks derived from joint doctrine publications and UJTLs. These tasks were decomposed to identify sub-tasks and information flow supporting each phase. The ten organizational elements, or swim lanes, are the key high level players that perform the decomposed sub-tasks. Those sub-tasks are depicted as blue and beige rectangular boxes. A blue box indicates a GCCS task and a beige box is a task that requires JTAV access and asset visibility information. A purple number adjacent to a beige box represents a functional requirement as defined in the JTAV Functional Requirements Document published in July 1997.

2.4.2 Information Exchange Requirements Matrix. In the context of C4ISR, IEMs express the relationship between the three basic entities (tasks, operational elements, and information flow).

The tasks depicted on the process maps do not represent discrete TAV information requirements in sufficient detail to build an IEM. Therefore, the JIPT tailored the IEM format as provided by the C4ISR, to link the information exchange requirements directly to the JTAV definition. This approach allowed the JIPT to group information exchange requirements in a logical array and eliminate duplication while ensuring inclusion of all requirements. This new IEM format is referred to as the information exchange requirements matrix (IERM) and can be found at Appendix C..

Reading from left to right at Appendix C, the first column traces the identified requirement to the JTAV definition. The second column depicts discreet information exchange requirements. Definitions of those requirements can be found in the third column followed by source node codes. These codes are defined in Appendix D. The last column is receiver node codes which are defined in Appendix E.

The IERM is framed by the JTAV definition, "identify, status, location and movement of units, personnel and material (supplies and equipment)". Based on the sub-groups' working arrangements, this matrix does not identify automated systems or data elements. The source and receiver node reference lists, Appendices D and E are the links between the process maps, Appendix B, and the IERM, Appendix C.

3.0 High Level Summary of Joint Warfighting. As JTAV is a capability that supports many processes, not a process in and of itself, in order to understand JTAV, it is essential to understand the process that it supports. Also, as the purpose of the operational architecture is to develop input to the system architecture, and the desired end result is the system and technical architectures, it is not necessary to recount all the detailed steps that were necessary in developing the operational architecture. Additionally, JTAV does not own any of the functional/operational processes that it supports, so it is not feasible for JTAV to perform the required reengineering to develop "To-Be" operational architectures, and the operational architectures developed for JTAV have been developed for that particular purpose and should not be considered authoritative, Section 3.0 is a high level summary of joint warfighting by phase to educate the reader who might not have experience in or understand joint warfighting. It is not intended to be a duplication or definition of joint doctrine.

3.1 Mobilization. Mobilization is the expansion of the Armed Services by assembling and organizing national resources to support national objectives in time of war or other emergencies. This phase of warfighting brings the Services, or part of them, to a state of readiness for war or another national emergency. (JP 1, 0-2, 3-0, 4-05, 5-0, (JP 4-0, 5-03.1))

3.1.1 Prepare for Mobilization. To plan, train and prepare to accomplish assigned mobilization activities; prepare mobilization plans, data and files; coordinate mobilization processing actions as possible at home station (HS) before being ordered to Federal active duty. To complete plans for all associated mobilization activities.

3.1.2 Alert Forces for Mobilization. To transition the force from Reserve component to Active component status with available personnel and facilities, and to complete all administrative and processing actions. The alert phase begins when units or individuals receive notice of pending order to active duty and ends when the unit enters active Federal service. **(JP 4-05, 5-0)**

3.1.3 Mobilize at Home Station. To bring units to active Federal duty, conduct specified training, transition those units to AC status, and prepare them for departure for their mobilization station. **(JP 4-05** *(JP 1-02))*

3.1.4 Move to Mobilization Station. To move or transport a **unit** and its equipment from HS to MS by any transportation means. **(JP 4-05** *(JP 1-02))*

3.1.5 Prepare Units and Individuals at Mobilization Station (MS) for Deployment. To determine the operational readiness of a unit at MS, validate the unit for deployment, and to take necessary action to correct shortages and deficiencies in training, manning levels, and equipment by cross-leveling and redistributing personnel and equipment. **(JP 4-0, 4-05** *(JP 1-02))*

3.1.6 Mobilize CONUS Sustaining Base. To expand the CONUS base to support emergency and mobilization requirements. The sustaining base consists of those elements that are oriented primarily toward sustaining and reinforcing the theater force. Included are mobilization stations/CONUS Replacement Centers, training bases, logistic support, (supply, maintenance, facilities, military production base, national industrial base, military construction,), and service support health services support, transportation support, and C2. **(JP** 4-0, **4-05)**

3.2 Deployment and Sustainment. Although we recognize that both doctrinally and operationally deployment and sustainment are two distinct phases of the warfighting process, for the purposes of developing a JTAV architecture they are not sufficiently different to warrant separate process maps. Deployment is the relocation of resources and materiel to a desired area of operation. (Joint Pub 1-02). Sustainment is the provision of personnel, logistics, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or national objective (Joint Pub 1-02). Deployment ends with reception, staging, onward movement and integration (RSO&I). Sustainment is accomplished through theater distribution and ends with satisfying customer requirements.

3.2.1 Deliberate Planning. This is the planning required to move forces and their initial sustainment from their original locations to a specific operational area to conduct joint operations outlined in a given plan (Joint Pub 5-0). Deliberate planning prepares for a possible contingency based upon the best available information and using forces and resources apportioned for deliberate planning by the Joint Strategic Capabilities Plan (JSCP). Conducted principally in peacetime, deliberate planning is directed toward providing and maintaining levels

of personnel, materiel and consumables required to support a planned type of combat activity for the appropriate duration and at the desired level of intensity. Planners must consider transportation infrastructures, consumption rates of critical supplies, the intensity of combat and expected resource usage, service planning factors, and the expected duration of the mission based on the guidance provided by the supported CINC. Deliberate planners participate in plan initiation, concept development, plan development, plan review, and supporting the plans. Although traditional deliberate planning deals with notional forces, the JSCP satisfies most asset information requirements.

3.2.2 Crisis Action Planning. Crisis action planning reacts to current events and is conducted in time-sensitive situations using assigned, attached, and allocated forces and resources. In many cases, crisis action planning builds on or tailors plans prepared during deliberate planning. Crisis action planning is comprised of four phases: Monitor and Assess the Crisis; Develop Courses of Action (COA); Select COA; and Execution Planning. Planners, especially force providers, need to aggregate information about forces and have predeployment visibility of forces' location, status, and unit-assigned property.

3.2.3 Deployment and Sustainment Execution. This includes the actions and the actual movement of forces and sustainment into the area of operations, and the provision of personnel, logistics, and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or national objective (Joint Pub 1-02). Although this is an intensive transportation phase, concurrent logistics actions have equally demanding and continuous visibility requirements. This phase is comprised of five major activities:

- Validate and Refine Time Phased Force and Deployment Data (TPFDD) Requirements and Sourcing (detailed asset visibility information, to include stockage levels across all supply classes, medical services, personnel strengths, and maintenance status, is required throughout this phase. Current and projected asset availability information is also required, including visibility of contracts to access commercial assets);
- Identify Transportation Assets and Channels The CINC and supporting commanders require visibility of available Government, commercial, and host-nation transportation assets (e.g., ships, aircraft, trains, trucks, and personnel) and transportation channels to move the force and sustainment materiel into and through the area of responsibility (AOR). ;
- Prepare/Load Assets;
- Move to Port of Embarkation (POE) ; and
- Depart to Port of Debarkation (POD).

Asset visibility of all personnel, forces, and material and conveyances are required throughout these activities. Especially critical is the capturing of changes as they occur at transition nodes and changes of conveyances.

3.2.4 Reception, Staging, Onward Movement and Integration. This phase describes the actions necessary to receive and integrate deploying forces into the theater of operations. This phase is comprised of four major subtasks:

- Reception of Forces - the process of offloading, marshaling, and transporting equipment, personnel, and materiel to complete the deployment phase from a sea or airport of debarkation.
- Staging of Forces - the process of assembling, temporarily holding, and organizing arriving personnel and materiel into units and forces; preparing them for onward movement and tactical operations; providing life support until units become self-sustaining; and holding and organizing sustaining materiel for onward movement.
- Onward Movement - the process of moving units and accompanying materiel from reception facilities or marshaling or staging areas to tactical assembly areas or other theater destinations. This includes moving arriving non-unit personnel to gaining commands, and
- Integration - the process of establishing force projection units into coherent operational units.

CINCs and operators require continued visibility of all personnel, forces, materiel, and readiness information throughout this task.

3.2.5 Theater Distribution. Assets are located and relocated within the theater of operations to maintain levels of personnel, materiel, and consumables required to sustain actual operations. Theater distribution includes

- receipt - This includes reception of materiel and personnel at the POD for incoming assets and the reception of materiel and personnel from within the theater for the theater asset pipeline.
- processing - Materiel and personnel assets are processed at various activities and nodes within the theater distribution network for further movement and administrative processing to an ultimate location. This includes materiel activities, e.g., hub and spoke operations, joint personnel reception sites and other support activities.
- movement - This includes the actual movement of individual supply items, personnel, and larger supply shipments and units. Asset visibility through the movement pipeline is critical for movements control, and
- storage, issue, and manning activities - Detailed asset visibility information, including stockage levels across all supply classes, medical services, personnel strengths and manning information, and maintenance status is required throughout this task.

CINCs and operators require visibility of all personnel, forces, and materiel movements within the AOR.

3.3 Employment. This is the strategic, operational, or tactical use of forces (Joint Pub 1-02). Although employment will pose numerous asset visibility requirements, such as location, movement, identity, and status of personnel and assets, this operational architecture does not address employment. However, the asset visibility requirements identified in the Mobilization, Deployment and Sustainment processes satisfy Employment asset visibility requirements. Therefore, they are not specifically identified as employment visibility requirements in this architecture.

3.4 Redeployment. This process is the transfer of a unit, an individual, or supplies deployed in one area to another area, to another location within an area, or to the zone of interior for the purpose of further employment (Joint Pub 1-02). [For all section 5.4 paragraphs, refer to Tab 1, Joint Redeployment Process map]. The visibility requirements identified in the deployment and sustainment processes continue during redeployment.

3.4.1 Redeployment Planning. Redeployment Planning is directed toward the transfer of units, individuals, or supplies deployed in one area to another area, to another location within the area, or to the Continental United States (CONUS) for the purpose of further employment (Joint Pub 5.0). Three sub-tasks comprise redeploynebt planning monitor and assess the situation, ,determine requirements, and assess capabilities.

3.4.2 Redeployment Preparation. Redeployment preparation comprises four sub-tasks, conduct reconstitution operations, process personnel and equipment for redeployment, initiate documentation, and prepare/load assets. CINCs and operators require continued visibility of all personnel, forces, materiel, and readiness information as forces are preparing for redeployment.

3.4.3 Redeployment Execution. Redeployment execution consists of four sub-tasks, movement to redeployment assembly areas, movement to final staging area, movement to POE, outloading, and depart POE**.** This phase ends with arrival at the POD where reception begins. CINCs and operators require visibility of all personnel, forces, and materiel movements during redeployment execution.

3.4.4 Reconstitution, Regeneration and Integration. This phase begins when forces and materiel arrive at a POD upon redeployment to the home station. This could be a CONUS POD, and forces and materiel would be forwarded to a home station. In cases where forces and materiel are redeployed to another area of operations see para 3.4.5. Reconstitution, regeneration, and integration comprises four sub-tasks, reception at POD, onward movement from POD, process personnel and equipment, and preparation for new missions. CINCs and operators require visibility of all personnel, forces, and materiel through processing at their final destinations.

3.4.5 Reception, Staging, Onward Movement and Integration. This phase describes the actions necessary to receive and integrate redeploying forces into the theater of operations. This phase is comprised of four major subtasks:

- Reception of Forces - the process of offloading, marshaling, and transporting equipment, personnel, and materiel to complete the redeployment phase from a sea or airport of debarkation.
- Staging of Forces - the process of assembling, temporarily holding, and organizing arriving personnel and materiel into units and forces; preparing them for onward movement and tactical operations; providing life support until units become self-sustaining; and holding and organizing sustaining materiel for onward movement.

- Onward Movement - the process of moving units and accompanying materiel from reception facilities or marshaling or staging areas to tactical assembly areas or other theater destinations. This includes moving arriving non-unit personnel to gaining commands, and
- Integration - the process of establishing force projection units into coherent operational units.

CINCs and operators require continued visibility of all personnel, forces, materiel, and readiness information throughout this task.

4.0 Summary. Joint Total Asset Visibility is not an automated information system but a capability. JTAV does not produce data but provides customized access to data in existing systems. JTAV does not verify or validate current business practices, but provides access to the information required for business process reengineering.

This portion of the JTAV operational architecture is based on the warfighting processes of mobilization, deployment, employment, sustainment, and redeployment and describes the asset visibility information needed to carry out those processes.

Appendix A - Acronyms

AIS	Automated Information System
AIT	Automated Identification Technologies
AOR	Area of Responsibility
C2	Command and Control
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CINC	Commander-in-Chief
CJCS	Chairman, Joint Chiefs of Staff
COA	Course of Action
CONUS	Continental United States
COTS	Commercial-Off-The-Shelf
DII/COE	Defense Information Infrastructure/Common Operating Environment
DoD	Department of Defense
DUSD(L)	Deputy Under Secretary of Defense (Logistics)
GCCS	Global Command and Control System
GCSS	Global Combat Support System
JCS	Joint Chiefs of Staff
JSCP	Joint Strategic Capabilities Plan
JTAV	Joint Total Asset Visibility
JTF	Joint Task Force
NCA	National Command Authority
POD	Port of Debarkation
POE	Port of Embarkation
RSO&I	Reception, Staging, Onward Movement and Integration
SHADE	Shared Data Environment
TAV	Total Asset Visibility
TPFDD	Time Phased Force and Deployment Data
US	United States

USTRANSCOM	United States Transportation Command

APPENDIX B - PROCESS MAPS

Joint Deployment and Sustainment Process Map

Joint Redeployment Process Map

NOTE : The process maps are not attached. They may be viewed in hard copy at the JTAV Program Office.

APPENDIX C
INFORMATION EXHANGE REQUIRMENTS MATRIX

See electronic file: OpArch_appendC.doc

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
1. Id	Identifying Information for a Unit	Alphanumeric identifier applying to a unique instance of unit e.g. UIC, DODAAC	A (Note 1)	A3 A4 (Note 1)	A3 A4b(4) (Note 1)	2-11 (ALL)
2. Id	Identifying Information for a Person	Alphanumeric identifier applying to an individual, e.g. Social Security Number, Service Id No. (U.S. military, civilian or contractor personnel who have a warfighting role/responsibility on the battlefield or in the theater)	A D (Note 1)	A1, A2 D1, D4 (Note 1)	A1, A2 D1, D4 (Note 1)	3(A-D), 4(ALL), 6, 8(ALL), 10(B-C),11
3. Id	Identifying Information for a Materiel Asset	Alphanumeric identifier applying to a unique instance of materiel item e.g. NSN, FSC/NIIN, CAGE/Part Number	A B F	A4 B1 F	A4b(4) B1d F	3(E-H), 4-9(ALL)
4. Id	Identifying Information for Non-U.S. Military Organizations	Alphanumeric identifier applying to individual organizations. e.g. NGO's, GO's Red Cross and non-U.S. forces	A E H	A1, A2 E	A1, A2 E	1,2,3(A-D), 4-8(ALL), 10(A-C),11
5. Id	Identifying Information for Non-U.S. Military Personnel	Alphanumeric identifier applying to an individual, e.g. Social Security Number, Service Id No. (Non-combatatant dependents, civilian government employees, journalists, non-U.S. personnel)	A E H	A1, A2 E	A1, A2 E	1,2,3(A-D), 4-8(ALL), 10(A-C),11
6. Id	Identifying Information for Non-U.S. Military Materiel	Alphanumeric identifiers applying to unique materiel. e.g. materiel from NGO's and nonU.S. forces	E F H	E F	E F	3(E-H), 4-8(ALL), 9A, 10A
7. Id	Identifying Information for (Unit Transport Facilities).	Alphanumeric identifier of the transport facility used for shipping units. e.g. airports, ocean terminals	C	C1	C1a, C1b, C1c	3-8(ALL), 10(ALL), 13
8. Id	Identifying Information for (Personnel Transport Facilities)	Alphnumeric identifier of the transport facility used for shipping personnel. e.g. airports, ports	C	C1	C1a, C1b	3(A-D), 4-8(ALL), 10(ALL), 13

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
9. Id	Identifying Information for (Materiel Transport Facilities)	Alphanumeric identifier of the transport facility used for shipping materiel. e.g. airports, transfer points	C	C1 C2	C1a, C1b, C1c C2	3-10(ALL), 13
10. Id	Identifying Information for (Unit conveyances)	Alphanumeric identifier of the transportation assets used to move/transport/relocate units. e.g. tail number, ship name	C D	C2, C3 D3	C2, C3 D3	3-8(ALL), 10(ALL), 13
11. Id	Identifying Information for (Personnel Conveyances)	Alphanumeric identifier of the transportation assets used to move/transport/relocate personnel. e.g. tail number, ship name	C	C1 C3	C1a, C1b	4(ALL), 5(ALL), 6, 7(A-J), 8(ALL), 10(ALL), 13
12. Id	Identifying Information for (Materiel Conveyances)	Alphanumeric identifier of the transportation assets used to move/transport/relocate materiel. e.g. tail number, ship name, truck number	C	C1 C3	C1a, C1b, C1c	3(E-H), 4-10(ALL), 11
13. Id	Identifying Information for Unit Transaction	Alphanumeric identifier applying to a unique occurrence of a Unit transaction, e.g. ULN, TMR	A C D	A3 C1 D2, D4	A3 C1 D2, D4	3(E-H), 4-10(ALL), 13
14. Id	Identifying Information for Personnel Transaction	Alphanumeric identifier applying to a unique occurrence of a Personnel transaction, e.g. requisition	A D	A1 D1	A1 D1	3(I-L), 4-6(ALL), 8(ALL), 11
15. Id	Identifying Information for Materiel Transaction	Alphanumeric identifier applying to a unique occurrence of a Logistics (Materiel Asset related) transaction, e.g. requisition, contract	A B D	A4 B1 D3	A4a, A4b B1b D3a	3(E-H), 4-9(ALL), 11
16. Id	Nomenclature Information for Unit	Name by which unit is called	A	A3	A3	ALL
17. Id	Nomenclature Information for Personnel	Name of person	A D E	A1, A2 D1	A1, A2 D1	3(A-D)(I-L), 4-8(ALL), 10C, 11
18. Id	Nomenclature Information for Materiel	Name of materiel item or materiel asset.	A B F	A4 B1 F	A4b B1 F	3(E-H), 4-9(ALL), 10(B-D), 11, 13

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
19. Id	Descriptive Information about Unit	Characteristics of the unit e.g. TOE, TDA, Service Code	A	A3	A3	ALL
20. Id	Descriptive Information about Personnel	Characteristics intrinsic to the person, e.g. sex, race	A D E	A1, A2 D1 E	A1, A2 D1 E	3(I-L), 6,8
21. Id	Descriptive Information about Materiel Asset	Characteristics intrinsic to the materiel item, e.g. hazmat, weight/cube ratio	A B D F	A4 B1 D3 F	A4b B1 D3a F	3(E-H), 4(ALL), 6-10(ALL), 13
22. Id	Classification Information about Unit	Category of Units. e.g Combat, Support, Engineer Transportation, Medical	A	A3	A3	ALL
23. Id	Classification Information about Personnel	Category of people, e.g. Govt. military, DOD civilian	A D E	A1, A2 D1 E	A1, A2 D1 E	2, 3(A-D), 3(I-L), 4-8(ALL), 11
24. Id	Materiel Asset Classification	Category of materiel e.g. supply classes, war reserve	A B	A4 B1	A4b(4) B1d	2,3(A-H), 4-9(ALL), 10B, 13, 14
25. Id	Unit Capability	Specific capabilities of Unit. e.g. ability to move tons, drive miles, build roads, process things , measure of what the unit can do	A D	A3 D2	A3 D2	2,3(A-D), 4-8(ALL)
26. Id	Personnel Skills	Specific capabilities of individual such as language, ability to handle special weapon, MOS	A D E	A1, A2 D1 E	A1, A2 D1 E	2, 3(A-D)(I-L), 4-8(ALL), 11
27. Id	Materiel capability	Specific capabilities of equipment. e.g. loads, rates, gallons, measure of what it can do	A B D F	A4 B1 D3 F	A4b B1 D3a F	2, 3(A-H), 4-9(ALL), 10(A-D), 13, 14
28. St	Status Information (person or thing) about Unit	Readiness ratings, ALO and MTOE information	A D	A3 D2	A3a D2a	1, 2, 3(A-D)(I-L), 4-8(ALL)

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
29. St	Status Information about Personnel	Characteristics which are temporal or conditional applying to the person. e.g. duty status ,medical profile, patient diagnosis, deployable/non deployable	D	D1, D4	D1, D4	3(I-L), 4-6(ALL), 8(ALL), 11
30. St	Status Information about Materiel	Characteristics applying to the materiel. e.g. condition code, availability for issue, purpose/ project code, I&S, advice code, ownership	A B D	A4 B1 D3	A4b B1a D3	3(E-H), 4-9(ALL), 13, 14
31. St	Projected/Actual Change in Status for Unit	Information on predicted or actual date/time when the status of the asset will change, e.g. date/time when mission capable	A B D	A3, A4 B1 D2 D3	A3a, A4a B1b D2a D3	1,2,3(A-D)(I-L), 4-8(ALL), 11
32. St	Projected/Actual Change in Status for Personnel	Information on predicted or actual date/time when the status of the person will change, e.g. date/time when ready to deploy/redeploy	A D E	A1, A2 D1 E	A1, A2 D1 E	3(I-L), 4-6(ALL), 8(ALL), 11
33. St	Projected/Actual Change in Status for Materiel	Information on predicted or actual date/time when the status of the materiel will change, e.g. projected shipment date, estimated materiel release date, maintenance	A B F	A4 B1 F	A4a, A4b B1a, B1b F	3(E-H), 4-9(ALL), 13
34. St	Available Units	Count/number of units available	A D	A3 D2	A3a D2a	1,2,3(A-D), 4-8(ALL)
35. St	Available Personnel	Count/number of personnel available.	A D E	A1, A2 D1 E	A1, A2 D1 E	3(A-D)(I-L), 4-8(ALL)

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APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
36. St	Available Materiel Assets a. Quantitative Information on materiel assets (Actual) b. Quantitative Information on materiel assets (Control)	a. Count or amount of materiel asset potentially available for deployment/other warfighter process , eg quantity on hand, due in, due out b. Count or amount of materiel that is subject to control such as war reserve, inventory objectives, etc.	A B	A4 B1	A4a B1a, B1b	3(A-H), 4-9(ALL)
37. Lo	Location Information for a Unit	Static physical location of unit e.g. postal address, base name, geoloc.	A D	A3 D2	A3 D2	ALL
38. Lo	Location Information for Personnel	Static physical location of person e.g. postal address, base name, geoloc.	A D E	A1, A2 D1 E	A1, A2 D1 E	3(A-D)(I-L), 4-8(ALL)
39. Lo	Location Information for a Materiel Asset	Static physical location of materiel e.g. depot or retail address, DODAAC, geoloc.	A B	A4 B1	A4a B1a, B1b	3(A-H), 4-9(ALL)
40. St	Status Information for a Unit Transaction	Actions taken on the unit document. e.g. loaded, awaiting shipment	B C	B1 C1 C3	B1a C1a, C1b C3	4(ALL), 6(ALL), 8(ALL), 14
41. St	Status Information on Personnel	Actions taken on the personnel document, e.g.	A D E	A1, A2 D1 E	A1, A2 D1 E	3(I-L), 4(ALL), 6(ALL), 8(ALL)
42. St	Status Information on Materiel Transaction	Actions taken on the materiel document, e.g. denial of requisition, MRO	A B	A4 B1	A4a B1a B1b	3(E-H), 4-6(ALL), 8(ALL), 9(ALL)
43.	Content Information on a Unit Transaction Document	Entries within a document for a unit transaction. e.g. USR	A D	A3 D2	A3a D2a	3(A-D), 7(ALL)
44. St	Content Information on a Personnel Transaction Document	Entries within a document for a personnel transaction e.g. manifest	D	D1	D1	3(I-L), 4-6(ALL), 8(ALL)

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
45. St	Content Information for a Materiel Transaction Document	Entries within a document for a materiel transaction, e.g. requisition, materiel release order, contract, purchase order	A B D	A4 B1 D3	A4a B1b D3	3(E-H), 4(ALL), 6-9(ALL),11
46. Mo	Movement Information on Unit	Unit's physical location at a point in time while in transit or within specific time parameters and mode of travel. e.g. map grids	A C D	A3 C1 D2	A3 C1a, C1b, C1c D2	2, 3(A-D), 4(ALL), 6-8(ALL), 11
47. Mo	Movement Information on Personnel	Personnel's physical location at a point in time while in transit or within specific time parameters and mode of travel. e. g. Personnel station	C D	C1 D1	C1a, C1b D1	3(A-D)(I-L), 4-6(ALL), 8(ALL), 11, 13
48. Mo	Movement Information on Materiel Asset	Materiel assets' physical location at a point in time while in transit or within specific time parameters and mode of travel. eg, geoloc	C	C1 C2	C1a, C1b, C1c C2	3(A-H), 4-9(ALL), 11, 13
49. Mo	Unit Projected/Actual Change in Movement	Estimated/Actual date and time when a physical location will be/is reached by the unit in transit	A C D	A3 C1 D2	A3 C1a, C1b, C1c D2	2, 3(A-D), 4(ALL), 6-8(ALL), 10(ALL), 11
50. Mo	Personnel Projected/Actual Change in Movement	Estimated/Actual date and time when a physical location will be/is reached by the person in transit	A C D E	A1, A2 C1 D1 E	A1, A2 C1a, C1b D1 E	3(I-L), 4-8(ALL), 10(ALL), 11
51. Mo	Materiel Asset Projected/Actual Change in Movement	Estimated/Actual date and time when a physical location will be/is reached by the materiel-asset in transit	C	C1 C2	C1a, C1b, C1c C2	3(E-H), 4(ALL), 6-10(ALL), 11
52. Mo	Descriptive Information about Unit Conveyance	Characteristics of the transportation asset used to move/transport/relocate units. e.g. type, speeds, ready for use	C	C1 C2 C3	C1b, C1c C2 C3	3(A-D), 4-8(ALL), 10(ALL), 13
53. Mo	Descriptive Information about Personnel Conveyance	Characteristics of the transportation asset used to move/transport/relocate personnel. , e.g. type, speeds, ready for use	C	C1 C2 C3	C1b C2 C3	4-8(ALL), 10(ALL), 13

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX - C ASSET VISIBILITY INFORMATION EXCHANGE REQUIREMENTS MATRIX

Trace to Defn	Information Exchange Requirement	IER Definition	Source Node			Receiver Node
54. Mo	Descriptive Information about Materiel Conveyance	Characteristics of the transportation asset used to move/transport/relocate materiel e.g. type, speeds, ready for use. Characteristics of motor/mobile vehicle such as barges, rail cars, airplanes, ships used to transport the materiel aset. e.g. call-name, type, normal speed, maximum speed, ready for use.	C	C1 C2 C3	C1b, C1c C2 C3	4-10(ALL), 13
55. Mo	Descriptive Information about Unit Transport Facility	Characteristics of the transport facility used for shipping Units. e.g. airports, ocean terminals	C	C1	C1a, C1b	7(ALL), 10(ALL), 13
56. Mo	Descriptive Information about Personnel Transport Facility	Characteristics of the transport facility shipping Personnel. e.g. Airports, ports	C	C1	C1a, C1b	7(ALL), 10(ALL), 13
57. Mo	Descriptive Information about Materiel Transport Facility	Characteristics of the transport facility used for shipping materiel. eg. supply activities, terminals, ports	B C	B1 C1 C2	B1a C1a, C1b C2	7(ALL), 9-10(ALL), 13
58. Mo	Identifying Information about Containers	Identity of the transportation assets used to assemble and consolidate materiel. e.g Container ID, RF Tag ID Pallet ID	A B	A4 B1	A4a B1a, B1b	4(ALL), 6(ALL), 8-10(ALL), 13

NOTE 1: Also assumes that data may be available from multiple sources and are generally used by numerous activities.

APPENDIX D
SOURCE NODE REFERNCE LIST

See electronic file: OpArch_appendD.doc

APPENDIX D - SOURCE NODE REFERENCE LIST

Level 1	Level 2	Level 3	Level 4
A. Headquarters	**1.** Military Personnel Office		
		a. Service Headquarters/	
		b. Intermediate Hqs	
		c. HQ/Installation	
	2. Civilian Personnel Office		
		a. Service Headquarters/	
		b. Intermediate Hqs	
		c. HQ/Installation	
	3. Operations Office Service Headquarters		
		a. Service Headquarters/	**(1)** Unit Readiness Office
		b. Intermediate Hqs	**(1)** Unit Readiness Office
		c. HQ/Installation	**(1)** Unit Readiness Office
	4. Logistics Office		
		a. Svc Hqs	
			(1) Materiel/Maintenance Manager (Wholesale/ Retail)
			(2) Program Executive Officer/ Weapon System Manager
			(3) Procurement Office
		b. Intermediate Hqs	
			(1) Materiel/Maintenance Manager (Wholesale/ Retail)
			(2) Program Executive Officer/ Weapon System Manager
			(3) Procurement Office
			(4) Cataloging
		c. Installation	
			(1) Materiel/Maintenance Manager (Wholesale/ Retail)
			(2) Program Executive Officer/ Weapon System Manager
			(3) Procurement Office
	5. Medical Office		
		a. Service Headquarters	
		b. Intermediate HQ	
		c. Installation	
		d. Hospital	
B. Defense Agencies			
	1. DLA		
		a. Distribution Depot (Container Consolidation Points)	
		b. Materiel/Maintenance Manager (Wholesale/ Retail)	
		c. Procurement Ooffice	
		d. Cataloging Office	
	2. Defense Mapping Agency		
	3. Defense Finance and Accounting Service		

APPENDIX D - SOURCE NODE REFERENCE LIST

C. Transportation

- **1.** TRANSCOM
  - **a.** Military Traffic Management Command (MTMC) (e.g. POE/POD)
  - **b.** Air Mobility Command (AMC)
  - **c.** Military Sealift Command (MSC)
- **2.** Transportation Units/ Elements (e.g., Trailer Transfer Points)
- **3.** Installation Transportation Office

D. Unit Staff

- **1.** J1, G1, S1 of a CINC, JTF, CORPS, Division, Brigade, Battalion, Wing, Squadron, Battle Group, Ship, Ship Yard
- **2.** J3, G3, S3 of a CINC, JTF. CORPS, Division, Brigade, Battalion, Wing, Squadron, Battle Group, Ship, Ship Yard
  - **a.** Unit Readiness Section
- **3.** J4, G4, S4, of a CINC, JTF, CORPS, Division, Brigade, Battalion, Wing, Squadron, Battle Group, Ship, Ship Yard
  - **a.** Supply/ Maintenence/Contracting Officer
- **4.** Medical Staff of CINC, JTF, CORPS, Division, Brigade, Battalion, Wing, Squadron, Battle Group, Ship, Ship Yard

E. GOs & NGOs

F. Commercial Vendor

G. GSA

H. Non-U.S. Forces

APPENDIX E
RECEIVER NODE REFERENCE LIST

See electronic file: OpArch_appendE.doc

APPENDIX E
RECEIVER NODE REFERENCE LIST

Key	Swim Lane	Key	Receiver Nodes
1	NCA	**1**	Office of the Secretary of Defense (OSD)
2	Joint Staff	**2**	Joint Staff
3	Service Headquarters/ Service Agencies	**3A**	Army Headquarters
		3B	Navy Headquarters
		3C	Air Force Headquarters
		3D	Marine Corps Headquarters
		3E	Army Materiel Command (AMC)
		3F	Naval Supply Systems Command (NAVSUP)
		3G	Air Force Materiel Command (AFMC)
		3H	Marine Corps Supply Systems Command
		3I	Army Personnel Command
		3J	Navy Personnel Command
		3K	Air Force Personnel Command
		3L	Marine Corps Personnel Command
4	Supported CINC	**4A**	Atlantic Command (ACOM)
		4B	European Command (EUCOM)
		4C	Pacific Command (PACOM)
		4D	U. S. Forces Korea
		4E	Central Command (CENTCOM)
		4F	Special Operations Command (SOCOM)
		4G	Southern Command (**SOUTHCOM)**
5	Supported CINC Service Component	**5A**	Army Component of Unified Command or Joint Task Force
		5B	Navy Component of Unified Command or Joint Task Force
		5C	Air Force Component of Unified Command or Joint Task Force
		5D	Marine Corps Force Component of Unified Command or Joint Task Force
6	Joint Task Force	**6**	Joint Task Force
7	Supporting CINC/ Supporting CINC Service Component	**7A**	Atlantic Command (ACOM)
		7B	European Command (EUCOM)
		7C	Pacific Command (PACOM)
		7D	Army Component of Unified Command
		7E	Navy Component of Unified Command
		7F	Air Force Component of Unified Command
		7G	Marine Corps Component of Unified Command
		7H	Southern Command (**SOUTHCOM)**
		7I	Central Command (CENTCOM)
		7J	Special Operations Command (SOCOM)
		7K	Strategic Defense Command
8	Deploying Unit	**8A**	Army Brigades, Divisions, CORPS
		8B	Navy Task Force, Battle Group
		8C	Air Force Squadron, Wing, Numbered Air Force
		8D	Marine Div, MAG, MAGTAF
9	Defense Logistics Agency (DLA)	**9A**	DLA Headquarters
		9B	Defense Industrial Supply Center (DEFISC)
		9C	Defense Personnel Support Center (DPSC)
		9D	Defemse General Supply Center (DGSC)
		9E	Defense Fuels Supply Centers (DFSC)

APPENDIX E
RECEIVER NODE REFERENCE LIST

		9E	Defense Reutilization Management Office (DRMO)
10	US Transportation Command (TRANSCOM)	**10A**	HQ USTRANSCOM
		10B	HQ Military Traffic Management Command (MTMC)
		10C	Air Mobility Command (AMC)
		10D	Military Sealift Command (MSC)